

RAINFALL IN JAMAICA.

Through the kindness of Mr. Maxwell Hall, meteorologist to the government of Jamaica and now in charge of the meteorological service of that island, we have received the following data:

*Comparative table of rainfall.
[Based upon the average stations only.]*

SEPTEMBER, 1909.

Divisions.	Relative area.	Number of stations.	Rainfall.	
			1909.	Average.
Northeastern division.....	25	17	Inches. 15.18	Inches. 7.80
Northern division.....	22	41	12.70	5.37
West-central division.....	26	20	19.45	10.34
Southern division.....	27	26	16.50	6.33
Means.....	100		15.66	7.44

The rainfall for the island for the month of September was

therefore more than twice the average. This heavy rainfall was due to two barometric depressions; the first continued from the 13th to the 15th, inclusive, and moving from the west of Jamaica onwards, it swept the Cayman Islands, the northwest of Cuba, and devastated New Orleans. The second continued from the 22d to the 27th, and again moved from the west of Jamaica.

These rains were highly beneficial to Jamaica.

The heaviest rainfall, 36.34 inches, occurred at Point Hill in St. Catherine; the smallest, 4.81 inches, occurred at Buff Bay.

	Grand Cayman, August, 1909.	Total fall.	Greatest fall.		Number of days on which 0.01 inch fell.
			Amount.	Date.	
East End.....		14.96	12.32	24	10
Boden Town.....		7.05	6.25	24	4
Georgetown.....		13.11	6.00	24	15

RIVERS AND FLOODS.

The principal floods of the month occurred in the Rio Grande and in its tributaries in northern New Mexico. The heavy rains of August had left the ground in a more or less saturated condition, and during the first six days of September rains were frequent and at times heavy. Over the Zuni Mountain country of New Mexico there were heavy downpours on August 29 and 30, and on September 1, 4, and 5. The result was a vast volume of flood waters that rushed down the mountain sides, filling all the arroyos and canyons, and causing a great amount of damage. The dam of the Bluewater Development Company in Valencia County, N. Mex., was partially carried away, and the spillway of the Zuni Dam at Blackrock, McKinley County, was undermined for some distance. The officials at the dams were able to telephone notice of the disasters to places below, and no lives were lost. Estimates as to the amount of damage vary considerably. The railroads were the principal sufferers, as about 10,000 feet of track were washed away, and the roadbeds for several miles on either side softened. There was very little loss of livestock and crops, as the worst of the flood waters ran over raw and uncultivated lands.

The flood wave passed down the Rio Grande, the crest

reaching San Marcial, N. Mex., on September 7, with a stage of 14 feet, 3 feet above the flood stage, and El Paso, Tex., on September 10, with a stage of 14.5 feet, 0.5 foot above the flood stage. The river at El Paso was at flood stage from September 9 to 13, inclusive.

Warnings were sent to El Paso on September 7, and repeated southward to the mouth of the river. Newspaper reports indicate that considerable damage was done along the lower river, mainly, however, by flood waters from the Mexican tributaries.

The usual seasonal low-water stages prevailed in the great rivers, but they were considerably higher than during the corresponding period of the preceding year, and, as a rule, they were ample for the purposes of navigation.

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport on the Red.—H. C. Frankenfield, Professor of Meteorology.

SPECIAL PAPERS ON GENERAL METEOROLOGY.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Librarian.

The following have been selected from among the titles of books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be lent for a limited time to officials and employees who make application for them. Anonymous publications are indicated by a —.

Austria. K. und k. Kriegsmarine.

...Jahrbuch der meteorologischen, erdmagnetischen und seismischen Beobachtungen. N. F. 13. Band. 1908. Pola. 1909. xxxv, 152 p. f°. (Veröffentlichungen des Hydrographischen Amtes der K. und k. Kriegsmarine in Pola. Gruppe 2.)

Beauchamp, R. de.

Essai de défense contre la grêle. Poitiers. 1908. 22 p. 8°.

Brodersen, Hans.

Berichte über Blitzschläge der Jahre 1884 bis 1899. Kiel. 1909. p. 51-275. 8°. (Hrsg. vom Naturwissenschaftlichen Verein für Schleswig-Holstein als Fortsetzung von: L. Weber, Berichte über Blitzschläge in der Provinz Schleswig-Holstein. 1.-4. Folge. Kiel 1885.)

Bunkofer, Wilhelm.

Entwurf eines Apparates für Beobachtung der Luftdruckschwankungen mit sehr starker Vergrößerung. Wertheim a. M. 1908. 7 p. 8°. (Wissenschaftliche Beilage zum Jahresbericht des Grossherzoglichen Gymnasiums zu Wertheim für das Schuljahr 1907-1908.)

Burgerstein, Alfred.

Die Transpiration der Pflanzen. Jena. 1904. x, 283 p. 8°.

Carrère, Jean.

La terre tremblante. Calabre et Messine 1907-1908-1909. Paris. 1909. 341 p. 12°.

Ficker, H. von.

Klimatographie von Tirol und Vorarlberg. Wien. 1909. 162 p. 4°. (Klimatographie von Oesterreich. Heft 4. Hrsg. von... der K. k. Zentralstation für Meteorologie und Geodynamik.)

Gellens, H. and others.

La marée-tempête du 12 mars 1906 dans le bassin de l'Escaut maritime. Bruxelles. 1908. 62 p. 18 pl. 8°. (Extrait du 1 fascicule des Annales des travaux publics de Belgique, février 1908.)

Genoa. R. Istituto idrografico.

Riepilogo annuale delle osservazioni meteorologiche 1908. Genova. 1909. 17 p. f°.

Gräter, A. S.

Das neue Weltbild nach dem Niedergang der mechanischen Natur-

- auffassung am Ende des zweiten nachchristlichen Jahrtausend. Stuttgart. [1907.] 167 p. 12°.
- Hands, Alfred.** Lightning and churches. London. 1909. 92 p. 8°.
- Hagen, Friedrich von.** Wustrow, sein Klima und die Wettervorhersage. Brandenburg a. H. 34 p. 4°. (Inaug.-diss.—Rostock.)
- Kaye, H. W.** The climate of Strathpeffer. London. 1909. 64 p. 12°.
- Laska, W.** Sammlung von Formeln der reinen und angewandten Mathematik. Braunschweig. 1888-1894. xvi, 107 p. 8°.
- Mahler, G.** Ueber Ionen und Elektronen. Stuttgart. 1908. 32 p. 8°. (Separatdruck aus Neues Korrespondenzblatt für die Höheren Schulen Württembergs, fünfzehnter Jahrg., 1908. Heft 11-12.)
- Makower, W. and others.** Investigations on the electrical state of the upper atmosphere. In Journal of the Institution of electrical engineers. London. Aug., 1909. p. 216.
- Menger, Erich.** Der Sonnenschein in Russland. Berlin. 1909. 123 p. 8°. (Inaug.-diss.—Berlin.)
- Podolia (Russia). Station expérimentale agronomique de Ploty.** Observations météorologiques 1908. Odessa. 1909. 59 p. 4°.
- Querfurt, Heinrich.** Die Einwirkung der Winde auf die Strömungen im Skagerrak und Kattegat mit besonderer Berücksichtigung der am Leuchtschiff Skagens Riff angestellten Beobachtungen während der Jahre 1903-1905. Berlin. 1909. 9 p. 4°. (Inaug.-diss.—Münster.)
- Reynolds-Ball, Eustace.** Mediterranean winter resorts. 6th edition. London. 1908. 646 p. 16°.
- Rolet, A.** Les gelées et la grêle. 2 v. Paris. n. d. 16°.
- Roster, Giorgio.** Climatologia dell' Italia nelle sue attinenze con l'igiene e con l'agricoltura preceduta da uno studio sui fattori climatici in genere. Torino. 1909. xxix, 1040 p. 8°.
- Saxony. Königl. sächsische Landes-Wetterwarte.** Dekaden-Monatsberichte (Vorläufige Mitteilung) ... 1908. Jahrg. 11. Dresden. 1909. 111 p. f°.
- Deutsches meteorologisches Jahrbuch. 1904. Dresden. 1909. 183 (96) p. f°.
- Schmiedeberg, Walter.** ... Die mathematische Darstellung des täglichen Ganges der Lufttemperatur als Folge von Insolation und Ausstrahlung. Bielefeld. 1909. 19 p. 8°. (Wissenschaftliche Beilage zum 13. Jahresbericht 1908 der Oberrealschule zu Bielefeld.)
- Vacher, Antoine.** Le Berry, contribution à l'étude géographique d'une région française. [Chap. 8. "Le climat."] Paris. 1908. 548 p. 8°.
- Voorhees, J. F.** ... The relation of the weather service to the farmers of Tennessee. Knoxville. 1910. 21 p. 8°. (Bulletin of the Agricultural experiment station of the University of Tennessee. No. 87. Jan., 1910.)
- Wegener, Alfred.** Drachen- und Fesselballonaufstiege. Köbenhavn. 1909. 75 p. 4°. (Danmark-ekspeditionen til gronlands Nordost-kyst 1906-1908. Bind 2. no. 1.)
- Wiesbaden. Meteorologische Station.** Ergebnisse der meteorologischen Beobachtungen der Station II. Ordnung Wiesbaden 1908. Wiesbaden. 1909. 54 p. 8°.
- Wilaski, P.** Klimatologische Beobachtungen aus Thera unter Mitwirkung von F. Frhr. Hiller von Gaertringen und E. Vassiliu. Berlin. 1902-1909. viii, 55-202 p. f°. (Thera; Untersuchung, Vermessungen und Ausgrabungen in den Jahren 1895-1902... Hrsg. von F. Frhr. Hiller von Gaertringen. 4th Band.)
- RECENT PAPERS BEARING ON METEOROLOGY AND SEISMOLOGY.**
- C. FITZHUGH TALMAN, Librarian.
- The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —.
- Geographical journal. London. v. 34. November, 1909.**
— The climate of Sweden in the post-glacial period. p. 569-570.
[Abstract of paper by Gunnar Andersson.]
— Nieve penitente in the Himalayas. p. 570-571.
- Lees, A. Oldham.** Cloud caps on snowy peaks. p. 573-579.
[With note and drawing by C. Reginald Enoch.]
- Japan. Imperial earthquake investigation committee. Bulletin. Tokyo. v. 3, no. 2. November, 1909.**
Omori, F. Preliminary report on the Messina-Reggio earthquake of December 28, 1908. p. 37-45.
Omori, F. Note on the propagation velocity of the Formosa earthquakes of 1906 and 1908. p. 47-60.
Omori, F. On the dependence of the transit velocity of seismic waves on the nature of path. p. 61-67.
- Mount Weather observatory. Bulletin. Washington. v. 2, pt. 3. 1909.**
Humphreys, W. J. Certain laws of radiation and absorption and a few of their applications. p. 109-131.
Humphreys, W. J. An unusual display of false cirrus. p. 133-135.
Rotch, A. Lawrence. The aerological congress at Monaco. p. 136-144.
- Nature. London. v. 83. 1909.**
Aitken, John. Atmospheric cloudy condensation. p. 8. (Nov. 4.)
— The upper air. p. 47-48. (Nov. 11.) [Abstract of report by Gold & Harwood.]
Aitken, John. The temperature of the upper part of clouds. p. 67. (Nov. 18.)
Chree, C. The measurement of solar radiation. p. 78. (Nov. 18.) [Abstract of paper by Bemporad.]
- Royal astronomical society. Monthly notices. London. v. 70. November, 1909.**
Maundier, E. Walter. Note on the cyclones of the Indian Ocean 1856-1867, and their association with solar rotation. p. 49-62.
- Royal society. Proceedings. London. ser. A. v. 83. December, 1909.**
Todd, George W. Thermal conductivity of air and other gases. p. 19-39.
T., F. T. Éleuthère Élie Nicolas Mascart, 1837-1908. p. 1-2. (Appendix.)
C., E. W. Georg von Neumayer, 1826-1909. p. 11-14. (Appendix.)
- Science. New York. v. 30. December 24, 1909.**
Knipp, Chas. T. A simple cloud apparatus. p. 930-932.
- Symons's meteorological magazine. London. v. 44. December, 1909.**
— Sir Arthur Mitchell, K. C. B., M. D.
- Curtis, R. H.** The standardization of sunshine recorders. p. 204-206.
- Bonacina, L. C. W.** On rainfall in relation to wind-direction. p. 207-210.
- Ciel et terre. Bruxelles. 30 année. 1909.**
— Les moyennes thermiques. p. 458-463. (1 déc.)
- Davy, F. H.** La sécheresse de l'air à l'intérieur des habitations au Canada. p. 475-482. (16 déc.)
- Journal de physique. Paris. 4th. Tome 8. Octobre 1909.**
Féry, C. Propriétés sélectives des corps noirs employés comme récepteurs dans la mesure de l'énergie rayonnante et conséquences qui en découlent. p. 758-770.
- Nature. Paris. 38 année. 1909.**
Dumas, Léon. Le feu follet. p. 30-31. (11 déc.)
Loisel, J. La pluie. p. 36-41. (18 déc.) [Illustrated.]
- Annalen der Hydrographie und maritimen Meteorologie. Berlin. 37. Jahrgang. November 1909.**
Pollitz, Theodor. Die Stürme im südlichen Indischen Ozean, eine Untersuchung ihrer Häufigkeit, Anfangsrichtung, Dauer, Winddrehung und Luftdruckverhältnisse. p. 529-553.
- Beiträge zur Geophysik. Leipzig. 10. Band. Dezember 1909.**
Fuchs, Karl. Die Fluthbewegungen in verschiedenen Tiefen des Meeres. p. 156-172.
- Messerschmidt, J. B.** Der tägliche Gang der erdmagnetischen Elemente und des luftelektrischen Potentialgefälles. p. 173-183.
- Harboe, E. G.** Mikrohomoseismen. p. 184-201.
- Beiträge zur Physik der freien Atmosphäre. Leipzig. 3. Band. November 1909.**
Wagner, Arthur. Die Temperaturverhältnisse in der freien Atmosphäre (Ergebnisse der internationalen unbemannten Ballonaufstiege). p. 57-167.
- Himmel und Erde. Berlin. 22. Jahrgang. Dezember 1909.**
Müller, Franz. In Nebel und Rauhreib. p. 129-137. [Illustrated with photographs of dew and frost deposits.]
- Illustrierte aeronautische Mitteilungen. Strassburg. 13. Jahrgang. 1909.**
Schreiber, Paul. Zur Technik der Pilotballon-Aufstiege. p. 1116-1122. (15 Dez.)
- Wendl, J. Zur Technik meteorologischer Fesselballonaufstiege. p. 1150-1151.
- Meteorologische Zeitschrift. Braunschweig. Band 26. November 1909.**
Voelkov, A. Das Klima Indiens nach neuesten Daten. p. 481-496.
- Wegener, Alfred.** Über den v. Bezoldschens Satz von der abkühlenden Wirkung der Erdoberfläche. p. 496-500.